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tween it and the bases or apparent insertion of the pair of leaves : this lateral offshoot grows downward, sometimes lengthening as in the foregoing species, sometimes remaining short, and its apex dilates into the new bulb.

This peculiarity was noticed by Mrs. Hedges, the discoverer of this interesting plant, to whom great credit is due. Most lady botanists are content with what appears above the surface ; but she went to the root of the matter at once. I learn that *E. albidum* abounds in the same locality. *E. Americanum* is also found in the region, but is scarce.

It is not easy to find or frame a specific name which will clearly express the most remarkable characteristic of this new species. But I will venture to name it

ERYTHRONIUM PROPULLANS.—E. scapo infra folia pullulante; foliis oblongo-lanceolatis acuminatis parum maculatis; perianthio roseo-purpureo (semipollicari), segmentis acutis basi luteo tinctis omnino planis (nec calloso-dentatis nec sulcatis); antheris oblongis; stylo fere equabili integerrimo; stigmatе parvo vix tridentato; ovulis in loculis 4-6.

Scape bulbiferous from its sheathed portion below the developed leaves; these oblong-lanceolate, acuminate, slightly mottled; perianth rose-purple or pink (half an inch long); the segments acute, all with a yellow spot but plane at the base, the inner like the outer destitute of either groove or tooth-like appendages, but a little more narrowed at base; anthers merely oblong; style hardly at all narrowed downward, entire, the small stigma even barely three-lobed; ovules few (4-6) in each cell.

EXPLANATION OF FIGURE 74.

- a. Flowering plant, just producing offset from the side of the slender stem or scape.
- b. Lower part of a small plant out of flower, with slender, stolon-like offset enlarging at the apex into a bulb.
- c. Lower part of a larger plant, with bulb formed without elongation of stalk.

REVIEWS.

GEOLOGICAL SURVEY OF ILLINOIS.*—This splendid volume is a fit successor to the three preceding, and in every way a credit to the great state that has so liberally provided means for Mr. Worthen to lay the results of his labors, and those of his efficient corps of assistants, before the world.

* Vol. iv. Geology and Palæontology. A. H. Worthen, Director. Imperial 8vo, pp. 508, 31 Plates. By authority of the State of Illinois, 1870.

The geological survey of Illinois was inaugurated by vote of the Legislature in 1851, and was continued for several years without any very important results having been made public. Soon afterwards a strong opposition was made to the survey, but thanks to the stand taken by the Hon. Richard Yates, at the time Governor of the state, a bill discontinuing the survey was vetoed, and in 1858, Mr. Worthen was appointed by Governor Bissell as State Geologist, and from that date the survey has had the continued and liberal support of enlightened legislators, Mr. Worthen being thus enabled to furnish a series of volumes that will rank second only to those of the New York survey, which has been continued for so many years, and has embraced the kindred departments of Zoology and Botany. May we not hope that Illinois will also continue her survey until not only her geology and palæontology are thoroughly reported on, but her Zoology and Botany as well, and a State Museum established that will have within its walls a complete representation of the Natural History of the state. Alas that the building for such a museum was delayed a moment after Mr. Worthen had called attention to its necessity in his first report, for his fears have proved true, and the fine museum of geology and palæontology which had been brought together by the survey has been, since the publication of the last volume, subjected to the fate that sooner or later seems to be the destiny of all museums not placed in fire proof buildings.

The first volume of this survey was published in 1866 and contains a general account of the geology of the state.

The second volume, published in the same year, is devoted to the palæontology, and has fifty plates on which are figured several hundred species of fossils. Especially important is this volume to the student of the fossil fishes and plants of our Coal Measures, in which the strata in Illinois are most remarkably rich.

The third volume of the survey, published in 1868, contains a continuation of the detailed geology of portions of the state, and description of many more fossils, illustrated by twenty plates and many cuts.

The fourth volume, published late in 1870, contains first a continuation of the special geology of thirty-three of the counties in the state, by the Director of the survey and his assistants, Messrs. Bannister, Bradley and Green; and secondly, the continuation of the palæontology of the state, in two sections; first, the fishes by

Prof. J. S. Newberry and Mr. Worthen, second, the plants by Prof. L. Lesquereux.

In the 2d volume of the survey, Messrs. Newberry and Worthen described and figured one hundred and eighteen species of fossil fishes, and in this present volume they add descriptions and figures of thirty-two new species and four new genera, "embracing some of the most remarkable forms yet found in the Carboniferous System" while investigation is being continued on a mass of specimens that will probably "add at least fifty or sixty more species to the list," making a total of over two hundred species of fishes from the Carboniferous System alone, "showing that the western localities of Coal Measures and Lower Carboniferous limestone strata, are far more productive in this interesting group of fossils than any other portion of the earth's surface hitherto explored."

In Prof. Lesquereux's report on the fossil plants, after describing the species that have been discovered since the publication of the second volume of the survey, and giving a systematic table of two hundred and fifty-six species of fossil plants from the Coal Measures of Illinois, he states that the list of species "is more than double that given in the second volume, and that of the recently discovered species, seventy-nine are considered as new, and forty, though known already from Europe, had not been recognized before from our American Coal Measures."

Prof. Lesquereux, in concluding his report on the plants, gives a very interesting account of the "Mode of Preservation of Vegetable Remains in our American Coal Measures" which is of such general interest that we shall reprint it in full in the *NATURALIST*.

He also devotes a number of pages to "The Flora of the Carboniferous Measures of Illinois, considered in some of its affinities" and to "The Stratigraphical and Geographical Distribution of the Fossil Plants of the Coal Measures."

The thirty-one plates illustrating the palæontological portion of the volume are engraved in a very superior manner by the Western Engraving Company, from drawings made by Prof. Lesquereux, Prof. Newberry and Mr. C. K. Worthen, and the whole execution of the volume is most creditable in all its departments.

From the letter of the Director of the survey, transmitting the manuscript to the Governor for publication, we obtain the gratifying intelligence that the manuscript for the fifth volume is ready for the printer, and the plates for the engraver; and that the

materials for the sixth volume are being prepared for publication as rapidly as possible. These two volumes will include the reports on the remaining counties in the state, and will complete the survey in accordance with the plan hitherto pursued.

NEW FOSSIL CRUSTACEA.*—Mr. H. Woodward, who has brought to the notice of naturalists so many crustacea of the older formations especially, describes and figures a new species of Scyllaridia (*S. Bellii*) from the London clay. The genus is allied to the modern Scyllarus, an ally of the Spiny lobster (*Palinurus*). Another interesting form, also figured, is allied to the fish louse, *Æga*. It is called the *Palæga Carteri*, and is from the Cretaceous formation.

Of the greatest interest, however, are the figures and descriptions of several species of *Cyclus* from the Carboniferous formation of Great Britain. These singular and puzzling forms are round, hemispherical, with the body trilobed, and with well marked segments and deep sutures between them. They are from two to five lines in length. Goldfuss originally figured one species as a trilobite (*Olenus serotinus*), and afterwards Münster referred it to *Limulus*; while Von Meyer believed it to be neither. Koninck, however, placed it among the aberrant trilobites near *Agnostus*. In 1868 Woodward said of it, "we must differ from M. de Koninck in referring this form to the Trilobita. If truly an adult, it must be placed near to *Apus*, with the other shield-bearing Phyllopoda; if a larval form, it may have been the early stage of *Prestwichia* or some other of the Coal Measures Limulidæ." In the present notice Mr. Woodward reiterates his opinion that "these forms may indeed be the larval stages of *Prestwichia*, *Bellinurus*, etc., the antetypes in Carboniferous times of the modern king crab."

In agreeing, so far as we can judge from the figures, with this view, we may say that *Limulus* sometime before hatching passes through a globular, hemispherical form, with deeply marked sutures, like those observed in several species of *Cyclus*. Thus the embryonic condition of the modern king crab, was, during the Carboniferous period, probably the mature, or at least larval (not embryonic) condition of the *Cyclus*. A study of these highly interesting forms will undoubtedly throw light on the affinities of both the king crabs and the trilobites, and indicate that they are

* New British Fossil Crustacea. Extracted from the Geological Magazine, London, 1870. Nos. 11 and 12. With two plates and wood-cuts. pp. 5 and 7.